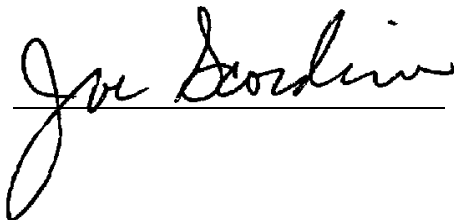


**Endangered Species Act Section 7 Consultation
Biological Opinion, Unlisted Species Analysis,
Section 10 Findings, &
Magnuson-Stevens Act Essential Fish Habitat Consultation**

for proposed issuance of a Section 10 Incidental Take Permit to Grants Pass
Irrigation District for Operations at Savage Rapids Dam

Agency: National Marine Fisheries Service

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region
Oregon State Habitat Branch

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1. INTRODUCTION

This document constitutes the National Marine Fisheries Service's (NMFS) consultation and Findings in accordance with sections 7(a)(2), and its implementing regulations, 50 CFR 402, and 10(a)(2)(B) of the Endangered Species Act of 1973 (ESA), on the issuance of an Incidental Take Permit (ITP) to Grants Pass Irrigation District (GPID) based upon their Habitat Conservation Plan (HCP) for the operation of Savage Rapids Dam and its appurtenant irrigation facilities for the 2001 irrigation season. In addition, this document includes the Essential Fish Habitat (EFH) consultation for coho salmon (*Oncorhynchus kisutch*) and chinook salmon (*O. tshawytscha*).

1.1 Background

Southern Oregon/Northern California (SONC) coho salmon are addressed in the HCP. The SONC coho salmon are listed as threatened under the ESA. Klamath Mountains Province (KMP) steelhead (*O. mykiss*) and Southern Oregon/Northern California Coastal (SONCC) chinook salmon are currently unlisted, and thus not protected under the ESA nor subject to the provisions of sections 7, 9 and 10. NMFS has agreed to add the KMP steelhead and SONCC chinook to the ITP when and if the species become listed in the future. All three species occur throughout the Rogue River Basin. EFH for coho salmon and chinook salmon was approved by the Secretary of Commerce on September 27, 2000.

As well as being a biological opinion (Opinion) for the proposed action of issuing an ITP for SONC coho, this document also provides the rationale and biological basis for making the decision whether to add the KMP steelhead or SONCC chinook salmon to the ITP should these species become listed, within the administrative requirements of sections 7 and 10, and subject to a subsequent determination by NMFS. Note that KMP steelhead and SONCC chinook were addressed during the development of the HCP conservation measures as if they were already ESA protected.

GPID has prepared a HCP that describes the Proposed Action at Savage Rapids Dam for one year, beginning with the irrigation season of 2001 (GPID 2001). GPID proposes to continue current operations at Savage Rapids Dam based on structural and operational modifications developed during 1998-2000, with further modifications based on the timing of fish runs. During implementation of the HCP, GPID will also pursue federal authorization and funding for the removal of Savage Rapids Dam.

In January of 2001, NMFS received an application package from GPID. NMFS prepared a draft Environmental Assessment (EA) to satisfy environmental review requirements under the National Environmental Policy Act (NEPA) (1969). The distribution of the draft HCP permit application and draft EA to interested parties began and the Federal Register notice was published on March 15, 2001 (66 FR 15080), which announced the availability of the documents to the public. The comment period closed April 16, 2001.

NMFS prepared a Final NEPA EA on the HCP, including a response to public comments on the draft EA. This document is available to the public on the NMFS Northwest Region website. This Opinion and Unlisted Species Analysis is based on the latest HCP from GPID (GPID 2001). As well, this analysis is based on information provided in the EA and technical papers prepared prior to the development of the HCP, and various other documents cited in this document. A complete administrative record on this analysis is on file in the NMFS' Oregon State Habitat Branch Office in Portland, Oregon.

Initiation of consultation is considered to have begun on the day that NMFS received the amended HCP application from GPID (January 19, 2001). The objective of this Opinion is to determine whether the proposed action to issue a permit is likely to jeopardize the continued existence of SONC coho salmon, or destroy or adversely modify designated critical habitat for this species.

EFH for these species will be evaluated and conservation recommendations provided as needed in this document. The EFH discussion occurs at the end of this document, separate from the ESA consultation.

1.2 Proposed Action

Under the proposed action, NMFS would issue a one-year ITP to GPID for continued operation of Savage Rapids Dam and the associated irrigation facilities while GPID pursues federal authorization and funding for the removal of Savage Rapids Dam. The ITP would be based on a Habitat Conservation Plan (HCP) that describes GPID activities for the 2001 irrigation season. Under the HCP, GPID would continue to divert up to 150 cfs of water from the Rogue River at Savage Rapids Dam into GPID's distribution system. In addition, the GPID Board will make every effort to promote support for dam removal, and secure federal legislation to authorize and fund dam removal.

1.2.1 Facilities Description

The Savage Rapids Dam is located on the Rogue River in southwest Oregon at river mile (RM) 107 about 5 miles east of the city of Grants Pass, Oregon. Savage Rapids Dam is owned and operated by GPID. Its sole purpose is to divert water for irrigation. Fish passage at Savage Rapids Dam has been an issue since the dam was constructed in 1921 by GPID. The concrete structure has a structural height of 39 feet, and a fish ladder was constructed on the north side at the time the dam was completed. A ladder was constructed on the southside in 1934. Rotating fish screens were an initial part of the gravity diversion on the south side. Early attempts to screen the pumping diversion on the north side were unsuccessful and the diversion remained unscreened until 1958. Fish passage improvements made in the late 1970's have helped reduce fish deaths, but fish passage problems continue.

The dam is a combination gravity and multiple-arch, concrete structure. The dam has a structural height of 39 feet, a hydraulic height of 30 feet, and an overflow crest with a length of approximately 465 feet. The crest is divided into 16 bays. The first seven bays at the north end of the dam are of multiple-arch construction with buttresses on 25-foot centers. The rest of the bays are concrete-gravity sections.

Metal stoplogs, installed and removed by a motorized cableway and hoist, control water going over the spillway section. A small, concrete-block structure above the north end of the dam houses the hoist equipment. The stoplogs raise the upstream water surface 11 feet, and are in use during the irrigation season only.

In the center of the dam at bays 10 and 11 are two river outlets controlled by 16-by-7 foot, hydraulically-operated, radial gates, each with a capacity of 3,000 cubic feet per second (cfs). The gates are used to de-water the reservoir to permit access to the crest of the spillway while the stoplogs are being installed and removed.

At the north end of the dam is a concrete structure designed to contain pumping equipment. The pumping facilities allow water to be pumped from the Rogue River into four canals at higher elevations, using hydraulically-powered pumps. One turbine drives a centrifugal pump which supplies water through a 42-inch pipe within the dam to the South Highline Canal and Savage Lateral on the south side of the Rogue River. The other turbine drives two pumps connected in series which supply water to the Tokay Canal and Evans Creek Lateral on the north side of the Rogue River. The two headworks are fed by the turbine and pump system on the north bank that diverts up to a total of 800 cfs from the river, 660 cfs of which drives two turbines, providing the energy for three pumps to lift about 90 cfs up to the canals. The water that drives the turbines returns directly to the tailrace of the dam.

The remaining diversion from the dam is the gravity diversion into the Gravity Canal (also known as the South Canal) at the south end of the dam. Flow is regulated by two four-foot by four-foot, hand-operated, slide gates in a headworks at the upstream face of the dam. GPID facilities also includes nearly 160 miles of canals and four relift pumping plants (BOR 1995).

There are fish ladders located at both the north and south sides of the dam to provide for upstream and downstream fish migration. The north fish ladder is a rectangular, concrete structure containing pools 8 feet long and 9 feet wide. The south fish ladder is a concrete structure approximately 100 feet long and divided into 10 pools. Extending from the bottom of the south ladder to the river are a series of fish resting pools and attraction channels.

GPID currently serves approximately 8,000 patrons owning a total of 7,700 acres in Jackson and Josephine counties. Savage Rapids Dam provides GPID with its primary water supply via canals in the greater Grants Pass area. The water provided by GPID is not treated and thus is not used for human consumption. Of the 8,000 patrons, about 300 own more than 5 acres and the remaining 7,700 own less than 5 acres. The patrons with more than 5 acres represent a variety of

agricultural interests (e.g., wine grapes, sugar beets, fruit orchards, etc.), but some industrial interests are also included in this group (e.g., lumber mills, a golf course, etc). Of the 7,700 patrons owning less than 5 acres, most use GPID water for small hayfields and/or personal vegetable gardens. Many of these patrons own less than 1/4 of an acre and use GPID water on their lawns (BOR 1995). Many GPID patrons have an alternative water source because they are served by municipal water from the city of Grants Pass, but this water is more expensive than GPID water. However, most GPID patrons, especially those with more than 5 acres, are outside the city of Grants Pass and do not have an alternative water source.

1.2.2 Summary of HCP Actions

The overall goal of the HCP is to implement conservation strategies designed to minimize take of all species of concern that may be affected by the facilities and operations of the Savage Rapids Dam and associated diversion facilities, while allowing GPID to provide water to its patrons for irrigation. GPID's HCP provides mitigation and minimization measures associated with an ITP for SONC coho salmon (GPID 2001). The HCP also minimizes take for the unlisted KMP steelhead and SONCC chinook salmon. The measures described in the HCP include measures to minimize direct and indirect take, mitigation, and monitoring the impacts of covered activities on runs of anadromous salmonids.

GPID generally begins diverting water in April, with water use increasing throughout the summer months of June, July and August. Historically, diversion rates begin to decline in September and the end of the irrigation season is in October. At the beginning of the irrigation season, usually in late April, the radial gates are opened to lower the reservoir pool, allowing installation of the stoplogs. Three metal stoplogs are placed in each of the 16 bays to raise the reservoir water surface elevation 11 feet above the concrete crest of the dam to an elevation of 964 feet above mean sea level. Once this is done, the radial gates are partially closed to fill the reservoir without completely interrupting riverflow. Approximately 1,000 cfs are allowed to pass until the filling is completed and the fish ladders are functioning.

In addition to implementing the minimization measures and monitoring described in the HCP, GPID will continue to seek the advice of its consultants and staff to make reasonably practicable adjustments to improve fish passage at the dam. The District will devote the remaining portion of its \$265,000 grant (roughly \$125,000 remains unspent) from the State of Oregon to make improvements at the fish passage facilities that GPID, its consultants, and NMFS deem reasonable.

GPID will continue seeking to remove Savage Rapids Dam and to replace the existing diversion facilities with new, electrically-powered pumping plants. Dam removal and construction of new diversion points is expected to proceed in accordance with federal legislation introduced on October 23, 2000, as S. 3227 (106th Congress, 2nd Session). The District is committed to continuing support of this legislation. However, the funding is uncertain at this time, and GPID proposes to continue operation of the current facility in 2001 to provide water to its patrons.

1.2.3 Covered Activities

Covered activities are described in the HCP, and in summary are: all GPID operations on the Rogue River at Savage Rapids Dam in conjunction with its diversion facility for 2001. This includes diversions at the north turbine/pump intake and the south gravity intake, the timing of operations, and monitoring the bypass trap. In addition, GPID will continue to pursue federal authorization and funding for the removal of Savage Rapids Dam and replacement of the dam with electric pumps for irrigation.

1.2.4 Action Area

The “action area” is defined within the ESA context as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action.” (50 CFR 402.02). Physical activities associated with the proposed action, such as operating the north turbine/pump intake and the south gravity intake, encompass the immediate area around Savage Rapids Dam. In addition, because the operation of the dam affects fish passage to reaches upstream of the dam that are accessible to anadromous salmonids, the action area includes these areas of the Rogue River upstream of the dam. The action area also includes the reach downstream of the dam that is affected by flows. This action area also applies to EFH, as described below.

The action area within the context of EFH is defined by Amendment 14 of the Pacific Coast Management Plan (1999) as “any activity that may adversely affect EFH, regardless of its location.” This area serves as a migratory corridor for both adult and juvenile life stages of coho salmon, chinook salmon and steelhead. Essential features of the adult and juvenile migratory corridor for the species are: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only), (8) riparian vegetation, (9) space, and (10) safe passage conditions (50 CFR Part 226). The essential features that the proposed action has the potential to affect are substrate, water quality, water velocity, and safe passage conditions. These features are also important for chinook salmon and steelhead, which overlap that of coho salmon within Elk Creek. In addition, these features are components of coho and chinook salmon EFH, as described in PFMC (1999).

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Evaluation the Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, the NMFS uses the following steps: 1) Consider the status

and biological requirements of the species; 2) evaluate the relevance of the environmental baseline in the action area to the species' current status; 3) determine the effects of the proposed or continuing action on the species; 4) consider cumulative effects; and 5) determine whether the proposed action, in light of the above factors, is likely to appreciably reduce the likelihood of species survival in the wild or adversely modify its critical habitat. In completing this step of the analysis, NMFS determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the continued existence of the listed species or result in the destruction or adverse modification of their critical habitat, or both. If NMFS finds that the action is likely to jeopardize the listed species, NMFS must identify reasonable and prudent alternatives for the action.

NMFS used the standards described above to analyze whether the proposed action of issuing the ITP would likely jeopardize the species or destroy or adversely modify critical habitat. This analysis will determine to what extent the action will likely affect three species of anadromous fish addressed by the HCP and the riparian and aquatic habitats important to the anadromous salmon. The NMFS jeopardy analysis considers how the proposed action is expected to directly and indirectly affect specific environmental factors that define properly functioning riparian and aquatic habitats essential for the survival and recovery of the species under consideration. This analysis considers the species' biological requirements under the environmental baseline, and takes into consideration the overall balance of beneficial and detrimental activities taking place within the HCP. If the effects of the actions are found to jeopardize a particular species, then the NMFS could not approve the issuance of the ITP for that species.

For NMFS to meet its obligation for consultation under section 7(a)(2) of the ESA, the conservation measures of the HCP proposed by GPID must be assessed to determine whether the action of issuing an ITP would; (1) Reasonably be expected to, directly or indirectly, appreciably reduce the likelihood of both the survival and recovery of listed species in the wild by reducing the reproduction, numbers, or distribution of that species; or (2) result in the destruction or adverse modification of designated critical habitat.

2.1.2 Biological Information and Critical Habitat

The SONC coho salmon were listed as threatened under the ESA on May 6, 1997 (62 FR 24588), critical habitat was designated on May 5, 1999 (64 FR 24049), and protective regulations were issued on July 18, 1997 (62 FR 38479). A listing of KMP steelhead was determined to be not warranted on April 4, 2001 (66 FR 9808) and a listing of SONCC chinook salmon was determined to be not warranted on September 16, 1999 (64 FR 50394).

A description of the life history, biology and biological requirements for SONC coho salmon, SONCC chinook salmon and KMP steelhead can be found in Spence et al. (1996), Weitkamp et al. (1995), Myers et al. (1998), and Busby et al. (1994). Based on the best available information on fish presence within the Rogue River, the NMFS expects that adult and rearing SONC coho salmon, SONCC chinook salmon and KMP steelhead would be present in the action area during

the irrigation season. The proposed action would occur within designated SONC coho salmon critical habitat (64 FR 24049) and described coho and chinook salmon EFH (PFMC 1999).

Critical habitat for SONC coho salmon includes all river reaches accessible to listed coho salmon between Cape Blanco and Punta Gorda. Excluded are areas above specific dams or above longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years). Freshwater critical habitat includes all waterways, substrates, and adjacent riparian areas—areas adjacent to a stream that provides the following functions: shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter—below longstanding, natural impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) and several dams that block access to former coho salmon habitat.

2.1.2.1 SONC Coho Salmon

NMFS described the population status of the SONC coho salmon ESU in its status review (Weitkamp et al. 1995). Coho salmon migrate downstream passed Savage Rapids Dam as juveniles in the spring and early summer, and upstream passed the dam as adults 18 months later from October to December. Coho in the Rogue River tend to spawn in smaller tributaries below Gold Ray Dam. However, a high percentage (up to 94.4 percent in 1983) of *wild* coho salmon entering the Rogue River pass Gold Ray Dam upstream of Savage Rapids Dam. The percentage that pass Savage Rapids Dam would be even greater as Evans Creek, a major core area for coho salmon, enters the Rogue River between Savage Rapids Dam and Gold Ray Dam. Counts of adult coho salmon run size at Gold Ray Dam was in the neighborhood of two to four thousand fish during the 1940s, declined to less than 200 fish for most of the 1960s and 1970s, and has returned to the two to four thousand fish range during the last four years. Numbers of wild yearling coho estimated to have passed Savage Rapids Dam from mid-May through mid-July from 1975 through 1986 have ranged from 273 fish (1984) to 14,421 (1983).

2.1.2.2 KMP Steelhead

The status of KMP steelhead is described in Busby et al. (1994). KMP steelhead are well distributed within the Rogue River, with two races present in the watershed (summer and winter). Adult summer steelhead enter the river from June to September, moving slowly upstream, occasionally holding near the mouth of cooler tributaries. Generally the first winter freshets cause these fish to move into smaller tributaries of the middle and upper Rogue River system. Spawning commences in mid-January. The run of winter steelhead is larger and more widely distributed. They enter the system primarily in mid-October and are found in most streams of the drainage where spawning is not precluded by a lack of flow, lack of spawning habitat, or the presence of passage barriers.

Chilcote (1998) concluded that upper Rogue River steelhead populations were self-sustaining. Surveys conducted in 1999 as part of the ODFW KMP Steelhead Project determined that

juvenile steelhead were present in 95 of 98 randomly selected sample sites in the upper Rogue River Basin.

2.1.2.3 SONCC Chinook Salmon

The status of SONCC chinook salmon is described in Myers et al. (1998). Spring and fall chinook salmon are present in the Rogue River. Adult spring chinook enter the Rogue River in the spring, remain in the main stem above Gold Ray Dam through the summer, and spawn in the fall. Fall chinook enter the system early in the fall and spawn through December, tending to use the river and tributary systems below Gold Ray Dam. Habitat loss and degradation are widespread throughout the ESU. However, the Rogue River chinook runs are considered relatively healthy compared to other rivers in the ESU.

2.1.3 Environmental Baseline

2.1.3.1 Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the biological requirements of the species most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list SONC coho salmon for ESA protection and also considers new data available that are relevant to the determination (Weitkamp *et al.* 1995).

The relevant biological requirements are those necessary for SONC coho salmon to survive and recover to naturally reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful migration. NMFS concludes that not all of the biological requirements of SONC coho salmon within the action area are currently being met under the environmental baseline.

2.1.3.2 Adequacy of Habitat Conditions in Critical Habitat

The environmental baseline includes the effects of past and on-going human and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The action area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing

fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation or loss of fish productivity. In this case, the proposed federal action is issuing the ITP. Indirect effects include potential impacts of injury, mortality, and increased stress on fish resulting from longer passage timing associated with the operation of Savage Rapids Dam and its diversion facilities. Mortality has the potential to affect fish production upstream of Savage Rapids Dam. The dam also influences streamflows in the reach downstream of the dam. The action area is defined in Section 1.2.4 of this document.

Within the Rogue River watershed, habitat losses that began a century and a half ago have continued. Settlement and agriculture in the dry Rogue valley encouraged over allocation of most of the tributary streams as early as 1900 (Oregon Progress Board 2000). Lower flows, reduced streamside cover, and streambeds shallowed by sediment have raised stream temperatures as much as 10°F in some parts of the Rogue basin. Its steep terrain makes the Klamath Mountains ecoregion particularly susceptible to landslides and debris flows, especially in extensively logged basins. Removal of large trees has exacerbated the natural effects of fire and floods in riparian areas along many rivers. Relatively few large conifers remain within the active flood plain, although historic evidence shows that conifers were once abundant in low gradient valley bottoms and were selectively logged in the 1950s and 1960s. This has limited the amount of large wood fallen into the stream which once created complex channels and buffered riparian areas against erosion from flood events. Measures of aquatic health, such as the proportion of intact riparian vegetation, suggest that extensive past damage may be reversing in some areas though changes in land use practices and habitat restoration. Despite this, native stocks of almost all of the region's anadromous fish have declined, including SONC coho salmon. Inventories of streams also found aquatic insect communities degraded throughout the area.

The Rogue River watershed is experiencing a drier than normal wateryear currently. Normal flows for the Rogue River at Grants Pass is 4,000 fps for this time of year. Current flows are in the 1,500 to 2,000 fps range.

2.1.4 Effects of the Proposed Action

2.1.4.1 Effects on Essential Features

Lethal and non-lethal impacts to anadromous salmonids would occur as a result of the issuance of the proposed ITP for the GPID HCP. Implementation of the HCP would result in lethal impacts including mortality of adults and juveniles coho salmon. Non-lethal impacts could include injury to fish and increased metabolic energy costs associated with migrating through the dam and reservoir.

The Oregon Department of Fish and Wildlife has estimated that juvenile fish losses of up to 10 percent could be expected at Savage Rapids Dam from predation, and that juvenile fish passage losses from all causes may average 10 to 15 percent. Adult fish passage losses of 10 to 30 percent are possible. The poor design of the fishways likely results in substantial delay and some mortality of adults. Predation losses are possible in the reservoir pool or tailrace due to changing the elevation of water in the pool during irrigation startup and shutdown. Potential predators include cormorants, herons, osprey, mergansers and kingfishers, all commonly observed along the Rogue River.

Total mortality of juvenile salmonids related to operation of Savage Rapids Dam is estimated based on the overlap in the timing of migration with the period of dam operation, and by the proportion of flow affected by the dam. All fish entrained into the irrigation canals (both on the north and south side) die because there is no return route to the river. The turbines on the north were not designed to be “fish friendly”, therefore approximately 30% of the entrained fish that pass through them are killed or injured; the number of fish passing through the turbines depends on the flow in the Rogue River and the effectiveness of conservation measures such as the lighting as described below. In addition, approximately half of the fish impinged by the screen die, and there is additional mortality associated with the pump.

The addition of forebay lighting to attract fish over the spillway reduces the number of juveniles that are impacted by the dam. A study conducted by GPID in 1998 demonstrated that fish use of the north-side bypass system appeared to drop by 90 % on nights when lighting over the spillway was turned on. There was no increase in fish entrainment on those nights, so the fish apparently passed over the spillway as intended. However, this analysis assumes that all juveniles are migrating at night; at least some percentage must migrate past the dam during the day when the lighting would not provide attraction.

The delayed start for diversion at the north turbine is designed to minimize impacts to migrating juvenile coho salmon. The traveling screen bypass trap will be operated at this location to monitor the migration of juvenile coho. If trigger numbers of coho are trapped, then GPID will shut down the diversion for 48 hours. This is designed to minimize mortality and injury to migrating juveniles. To further reduce take to juvenile coho, GPID will operate and maintain brush seals around the screens, and a screen backwash system.

The most notable effects of Savage Rapids Dam on adult fish passage in the past have been on spring chinook and steelhead during periods of high flow. When flow exceeds roughly 10,000 cfs, spill occurs over all bays of the dam and the attraction flows into the ladder become difficult for adult fish to locate. This results in a delay of upstream migration until flows recede. High flows also cause problems in the fish ladders because fish tend to jump out and get stranded on the rocks below. Fences have been placed along the ladders to prevent fish from jumping out and being stranded. This does reduce mortality. However, the fencing washes out at high flows which is the same time that some adults get stranded outside the ladders. It is then difficult to replace the fencing at the high flows.

Lower water in the Rogue River results in a greater percentage of the flow going through the turbines, consequently more juveniles are exposed to the screens. Best estimates indicates approximately half the juveniles could be exposed to the screens. Measures to minimize injury and mortality of juveniles at the screens that have been incorporated into the HCP are important to avoid significant long-term impacts. Also, depending on air temperatures, there is the potential for higher water temperatures, which increases the risk of mortality and disease.

In addition, lower flows in the fall could lead to increased delay of adult coho migrated past the dam; the effect of this delay on fish has never been quantified. The change in delay would rely on flows this fall.

Total mortality of juveniles is estimated to be 10 to 15 percent by ODFW. This may be decreased by the conservation measures such as the forebay lighting. However, this will likely be off-set by the low-water year and the greater percentage of fish exposed to the turbines. Therefore, based on estimates of juvenile coho population sizes presented in section 2.1.2.1 and the effects described above, the injury and mortality of juveniles is estimated to be 1,400 fish to 2500 fish. Total mortality of adult coho salmon is estimated to be 200 to 1,200 fish.

2.1.4.2 Effects on Critical Habitat

The NMFS designates critical habitat based on physical and biological features that are essential to the listed species. SONC coho salmon critical habitat was designated May 5, 1999 (64 FR 24049). SONC coho salmon critical habitat encompasses accessible reaches of all rivers (including estuarine areas and tributaries) between the Mattole River in California and the Elk River in Oregon, including all waterways and substrate below longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years). Essential features of designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Because the critical habitat is inclusive of the Savage Rapids Dam action area, and the above description of the effects of the proposed action includes habitat effects, a separate description of the effects of the project on critical habitat here is not necessary. In addition, since KMP steelhead and SONCC chinook salmon occupy essentially the same habitats as SONC coho salmon, any discussion of SONC coho salmon critical habitat or effects of the alternatives on that habitat is considered applicable to KMP steelhead and SONCC chinook salmon.

2.1.5 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future state or private activities, not involving federal activities, that are reasonably certain to occur within the action area of the federal action subject to consultation." Future federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being

(or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

The NMFS is not aware of any specific future non-federal activities within the action area that would cause greater impacts to listed species than presently occurs. The NMFS assumes that future private and state actions will continue at similar intensities as in recent years.

2.1.6 Conclusion

After reviewing the current status of SONC coho salmon and the environmental baseline for the action area, the effects of the proposed issuance of a one-year ITP and the cumulative effects, NMFS has determined that the issuance of the ITP, as proposed, is not likely to jeopardize the continued existence of the SONC coho salmon, and is not likely to destroy or adversely modify designated critical habitat. This finding is based, in part, on the short-term timeframe (one-year) of the ITP, the improving trend in production of coho salmon in the Rogue River, the incorporation of best management practices (BMPs) into the proposed action, and GPID's efforts to pursue federal authorization and funding for the removal of Savage Rapids Dam as a long-term solution to fish passage problems. The effects are not expected to be measurable as long-term effects on the species' population levels given the one-year duration of the action.

2.1.7 Reinitiation of Consultation

This concludes formal consultation on these actions in accordance with 50 CFR 402.14(b)(1). Reinitiation of consultation is required: (1) If the action is modified in a way that causes an effect on the listed species that was not previously considered in the biological assessment and this Opinion; (2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (3) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

2.2 Incidental Take Statement

2.2.1 SONC Coho Salmon

Section 9 of the ESA and federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered species and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Harm is further defined by the NMFS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, and sheltering. Harass is defined by the NMFS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the

terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the term and conditions of this Incidental Take Statement.

The proposed Operation of Savage Rapids Dam HCP and its associated documents clearly identify anticipated impacts to affected species likely to result from the proposed taking and the measures that are necessary and appropriate to minimize those impacts. All conservation measures described in the proposed HCP and the section 10(a)(1)(B) permit issued with respect to the proposed HCP, are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this Incidental Take Statement pursuant to 50 CFR 402.12(I). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and section 7(o)(2) of the ESA to apply. If the permittee fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(B) permit and section 7(o)(2) may lapse. The amount or extent of incidental take anticipated under the proposed Operation of Savage Rapids Dam HCP, associated reporting requirements, and provisions for disposition of dead or injured fish are as described in the HCP and its accompanying section 10(a)(1)(B) permit.

NMFS particularly wants to emphasize the following terms and conditions:

1. The existing traveling screen bypass trap will be operated at the North Turbine-Pump Intake, unless NMFS and GPID agree to some other location. The bypass trap will be installed prior to diversion of any water.
2. Monitoring and triggers for shut down will occur as described in the HCP. Monitoring reports shall be submitted to:

National Marine Fisheries Service
Oregon State Branch, Habitat Conservation Division
Attn: OSB2001-0083-FFEC
525 NE Oregon Street, Suite 500
Portland, Oregon 97232-2778

3. GPID will minimize the amount of time the radial gates are open, especially when installing or removing the flash boards, to minimize delays of upstream adult fish passage.
4. The operation of the radial gates in the fall should coincide with periods when runs of adult coho salmon are at their lowest (minimum number of fish moving in the river) to reduce the adverse impacts to migration. This timing should be closely coordinated with ODFW, NMFS, and Oregon Department of Water Resources.

5. GPID will continue to pursue federal authorization and funding for the removal of Savage Rapids Dam.
6. If a dead, sick or injured Oregon Coast coho salmon is located, immediate notification must be made to Frank Bird, NMFS, telephone: (541) 957-3383, or Chris Knutsen, ODFW, telephone: (503) 842-2741. Care will be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured species or preservation of biological material from a dead animal, the finder has the responsibility to carry out instruction provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

The NMFS anticipates that the proposed action covered by this Opinion has more than a negligible likelihood of incidental take of SONC coho salmon over the one-year life of the permit. The incidental take of this species is expected to be in the form of harassment, kill and injury, resulting from covered activities under the HCP.

Effects of actions such as these are estimated below for the short term, and are not expected to be measurable as long-term effects on the species' population levels given the one-year duration of the action. The effects of these activities on population levels not expected to be measurable in the long term, given the short-term duration of the action.

Total mortality of juveniles is estimated to be 10 to 15 percent by ODFW. This may be decreased by the conservation measures such as the forebay lighting. However, this will likely be off-set by the low-water year and the greater percentage of fish exposed to the turbines. Therefore, based on estimates of juvenile coho population sizes presented in section 2.1.2.1 and the effects described above, the injury and mortality of juveniles is estimated to be 1,400 fish to 2500 fish. Total mortality of adult coho salmon is estimated to be 200 to 1,200 fish.

2.2.2 KMP Steelhead - Unlisted Species

Take of KMP steelhead is not prohibited. NMFS anticipates that an undetermined amount of mortality of KMP steelhead may occur as a result of implementation of the proposed action. The impacts would occur as described above for coho salmon.

2.2.3 SONCC Chinook Salmon - Unlisted Species

Take of SONCC chinook salmon is not prohibited. NMFS anticipates that an undetermined amount of mortality of KMP steelhead may occur as a result of implementation of the proposed action. The impacts would occur as described above for coho salmon.

2.3 Section 10(a)(2)(B) Findings

2.3.1 Permit Issuance Considerations

Although only coho salmon are listed under the ESA at this time, this document is intended to provide GPID assurances that they will receive an incidental take permit if, during the term of the permit, unlisted species are subsequently listed under the ESA. In order to issue an incidental take permit under 50 CFR §222.22(c)(1), NMFS must consider the following:

1. The status of the affected species or stocks. The status of anadromous salmonids potentially affected by the HCP has been considered above (see Section 2.1.2). The environmental baseline for anadromous fish and their habitats (Section 2.1.3) was also considered.
2. The potential severity of direct, indirect and cumulative impacts on anadromous salmonids and their habitats as a result of the proposed activity. The impacts of the HCP were examined above (Section 2.1.4).
3. The availability of effective monitoring techniques. Monitoring of the implementation of the HCP and the effectiveness of the HCP conservation measures are a critical feature of the HCP. A monitoring report will be completed and submitted to NMFS at the completion of the irrigation season.
4. The use of the best available technology for minimizing or mitigating impacts. The conservation measures established in the Operation of Savage Rapids Dam HCP represent the most recent developments in science and technology in minimizing take associated with the operation of the dam and its diversion facilities.
5. The views of the public, scientists, and other interested parties knowledgeable of the species or stocks or other matters related to the application.

A NEPA analysis was conducted and a Record of Decision was issued in March 1997 for fish passage improvements at Savage Rapids Dam. The federal action agency at that time was the Bureau of Reclamation. The preferred alternative (Pumping Alternative) included replacing the GPID pumping and diversion facilities at the dam with two new pumping plants, removing the dam and appurtenant structures and restoring the site, and forgiving the remaining GPID debt to the federal government. This alternative has not been implemented. However, participation by the public and by state, federal, county, and local entities were an integral part of the NEPA process. Public participation was initiated in 1987. GPID began a public involvement program in 1990. Public meetings were held in 1991 and 1993. Three newsletters were sent out in 1991 and 1992. The draft Environmental Impact Statement was distributed in 1994, and a public meeting was held in 1995.

For the issuance of the ITP for GPID's HCP, public comments were solicited on the completed permit application package and the draft Environmental Assessment (EA) (GPID 2001, NMFS 2001). The availability of the documents for public review was announced in the Federal Register (66 FR 15080). The permit application package and draft EA were also mailed directly to 11 federal and state legislators, five federal and state agencies, Jackson County, Josephine County, Grants Pass and the Rogue Valley Council of Governments, as well as three libraries and eight organizations. The comment period ended April 16, 2001, and during that time five letters, 1 e-mail and one phone call were received. All these comments are summarized in the final EA.

2.3.2 Permit Issuance Findings

Having considered the above, the NMFS makes the following findings with regard to the adequacy of the HCP meeting the statutory and regulatory requirements for an Incidental Take Permit under Section 10(a)(2)(B) of the ESA and 50 CFR aSection 222.22(c)(2):

1. The taking of listed species will be incidental to irrigation activities. NMFS anticipates that the proposed action would likely result in incidental take of threatened southern Oregon/northern California coho salmon, and other currently unlisted species of anadromous salmonids, if they are listed. Activities that will occur during the implementation of the HCP that may result in take (mortality and injury) include operation of the diversion facilities, pumps, fish ladders and the dam itself. Some instances of incidental take will likely occur despite the conservation measures in the HCP. The take is not quantifiable, and would be limited in extent to the vicinity of the dam and the appurtenant facilities.

2. GPID will, to the maximum extent practicable, monitor, minimize and mitigate the impacts of taking of anadromous salmonids associated with the operation of dam and the appurtenant facilities. Measures in this HCP minimize and mitigate for take impacts that may occur, through alteration of operations if trigger numbers of fish are caught in the bypass trap, operation and maintenance of a brush seal at the base of the traveling screens as well as a screen backwash system, operation and maintenance of the new screen at the south gravity intake, monitoring of impingement, and operation of the forebay lighting. GPID will pursue federal authorization and funding for the removal of Savage Rapids Dam. The removal of Savage Rapids Dam, if authorized and funded, would greatly reduce the take of coho salmon associated with the operation of GPID's irrigation program. Finally, GPID will monitor its operations to determine the effectiveness of the take minimization measures.

The HCP provides specific conservation measures to monitor, minimize, and mitigate the impact of take of SONC coho salmon under the permit.

3. Based on the best available scientific information, the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild, or adversely modify or destroy critical habitat for SONC coho salmon. Conservation measures will minimize take during key migration periods, and the take authorized will be limited to one irrigation season.

The ESA's legislative history establishes the intent of Congress that this issuance criteria be based on a finding of "not likely to jeopardize" under section 7(a)(2) [see 50 CFR §402.02]. This is the identical standard to section 10(a)(2)(B). The conclusions regarding jeopardy for the listed ESU and for all other unlisted anadromous salmonids are found in section 2.1.6 in the Opinion above. In summary, NMFS has considered the status of the species, the environmental baseline and the effects of the proposed action, and any indirect and cumulative effects, to conclude that issuance of the Incidental Take Permit for SONC coho and any unlisted species as described above, would likely not jeopardize the continued existence of any of the anadromous salmonids addressed in the HCP.

4. The plan has been revised to assure that other measures, as required by NMFS, have been met.

The HCP incorporates all elements determined by NMFS to be necessary for approval of the HCP and issuance of the permit.

5. NMFS has received the necessary assurance that the plan will be funded and implemented.

The HCP commits GPID to adequately fund implementation of the HCP. In addition, the State of Oregon provided a \$265,000 fund for interim fish passage improvements at the dam, of which roughly \$125,000 remains unspent. These funds are available for further operational and structural improvements deemed reasonable by GPID and NMFS.

2.3.3 Conclusion

Based on these findings, it is determined that GPID's HCP meets the statutory and regulatory requirements for an Incidental Take Permit under section 10(a)(2)(B) of the ESA and 50 CFR § 222.307.

2.3.4 Procedures in the Event of Listings

Should any of the currently unlisted plan species subsequently become listed, GPID may propose to add that species to the permit. If such an amendment request is received, NMFS will determine whether such addition would meet the permit issuance criteria under ESA section 10(a)(2)(B). If the species to be added is already addressed in the HCP, the NMFS will consider, in making the required determinations, the extent to which GPID's implementation of the HCP, or any other voluntary conservation measures undertaken by GPID since issuance of the permit, have already minimized or mitigated for negative effects on the species. It is expected that, upon listing of a currently unlisted species, additional information will be available in any proposed, final, or emergency listing to determine the habitat and life-history requirements of the species, the range-wide status, threats to the species, applicable management recommendations, and other basic information necessary to complete the amendment processes. Before such species would

be added to the permit, NMFS must find that adding the species to the permit would not appreciably reduce the likelihood of survival and recovery of the affected species in the wild and would be consistent with its other responsibilities.

3. MAGNUSON-STEVENSON ACT

In addition to ESA consultation, consultation is required for Essential Fish Habitat (EFH) under the Magnuson-Stevens Act. The objective of the EFH consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse impacts to EFH resulting from the proposed action. The proposed action of issuing a permit for activities at Savage Rapids Dam may adversely affect EFH for Pacific salmon (chinook and coho).

3.1 Magnuson-Stevens Fishery Conservation and Management Act

EFH provisions of the Magnuson-Stevens Act (MSA) require heightened consideration of fish habitat in resource management decisions. EFH is defined in the section 3 of the MSA as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The NMFS interprets EFH to include aquatic areas and their associated physical, chemical and biological properties used by fish that are necessary to support a sustainable fishery and the contribution of the managed species to a healthy ecosystem.

The MSA and its implementing regulations at 50 CFR 600.920 (j) require that before a federal agency may authorize, fund or carry out any action that may adversely effect EFH, it must consult with NMFS and, if requested, the appropriate Regional Fishery Management Council. The purpose of consultation is to develop a conservation recommendation that addresses all reasonably foreseeable adverse effects to EFH. Further, the action agency must provide a detailed response in writing to NMFS and the appropriate Council within 30 days after receiving an EFH conservation recommendation. The response must include measures proposed by the agency to avoid, minimize, mitigate, or offset the impact of the activity on EFH. If the response is inconsistent with conservation recommendations of NMFS, the agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, or mitigate such effects.

This consultation requirement does not distinguish between actions which occur within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and up slope activities that may have an adverse effect on EFH. Therefore, EFH consultation with NMFS is required by federal agencies undertaking, permitting or funding activities that may adversely affect EFH, whatever its location.

3.2 Identification of Essential Fish Habitat

The Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. The designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line, and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (200 miles)(PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years) (PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within PFMC is one of eight Regional Fishery Management Councils established under the Magnuson-Stevens Act. The PFMC develops and carries out fisheries management plans for Pacific coast groundfish, coastal pelagic species and salmon off the coasts of Washington, Oregon and California, and recommends Pacific halibut harvest regulations to the International Pacific Halibut Commission.

Pursuant to the MSA, the PFMC has designated freshwater and marine EFH for chinook and coho salmon (PFMC 1999), EFH for five species of coastal pelagic species (PFMC 1998a), and a "composite" EFH for 62 species of groundfish (PFMC 1998b). For purposes of this consultation, freshwater EFH for chinook and coho salmon in Oregon includes all streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to chinook or coho salmon, except upstream of the following impassable dams: Opal Springs, Big Cliff, Cougar, Dexter, Dorena, Soda Springs, Lost Creek, Applegate, Bull Run, Oak Grove, and the Hells Canyon Complex. In the future, should subsequent analyses determine the habitat above any of these dams is necessary for salmon conservation, the PFMC will modify the identification of Pacific salmon EFH (PFMC 1999). Marine EFH for chinook and coho salmon in Oregon includes all estuarine, nearshore and marine waters within the western boundary of the U.S. Exclusive Economic Zone (EEZ), 200 miles offshore.

3.3 Proposed Actions

The proposed action is detailed above in Section 1.2. The action area encompasses the area immediately associated with Savage Rapids Dam, in addition to areas upstream and downstream of the dam that are influenced by flow modifications caused by the dam.

3.4 Effects of the Proposed Action

The NMFS concludes that the effects of this project on designated EFH are likely to be within the range of effects considered in the ESA portion of this consultation, and concurs with the

finding that the proposed issuance of the ITP is likely to adversely affect EFH designated for Pacific salmon (chinook and coho).

3.5 Conclusion

The NMFS believes that the proposed action may adversely affect designated EFH for the Pacific salmon (chinook and coho).

3.6 EFH Conservation Recommendations

The Terms and Conditions outlined above in Section 2.2 are applicable to designated Pacific salmon EFH. Therefore, NMFS recommends that they be adopted as EFH conservation measures. Should the federal action agency, in this case NMFS, adopt and implement these recommendations, potential adverse impacts to EFH would be minimized. NMFS has accepted the conservation measures and they have been incorporated into the terms of the Incidental Take Permit

3.7 Consultation Renewal

The NMFS must reinitiate EFH consultation if the action is substantially revised in a way that may adversely affect EFH or new information becomes available that affects the basis for NMFS' conclusion regarding EFH conservation recommendations (50 CFR 600.920).

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